Experiences from EU and UN initiatives to promote SME involvement in RE & EE

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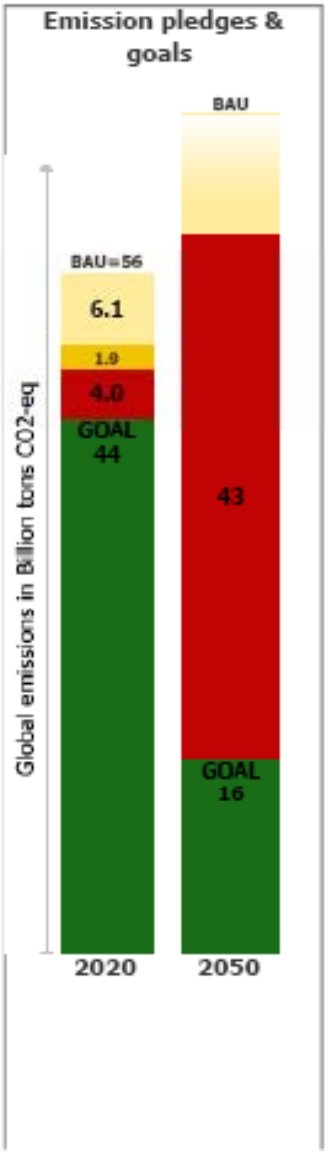
Outline of presentation

- Rationale
  - Climate mitigation and energy security challenges
- Role of RE & EE in green growth
- Shifting role of SMEs in RE delivery
- Facilitating SME development
- Experiences with RE & EE in EU & US
- UNEP experiences from developing countries
  - Enterprise development support
  - Consumer demand stimulation

United Nations Environment Programme
environment for development

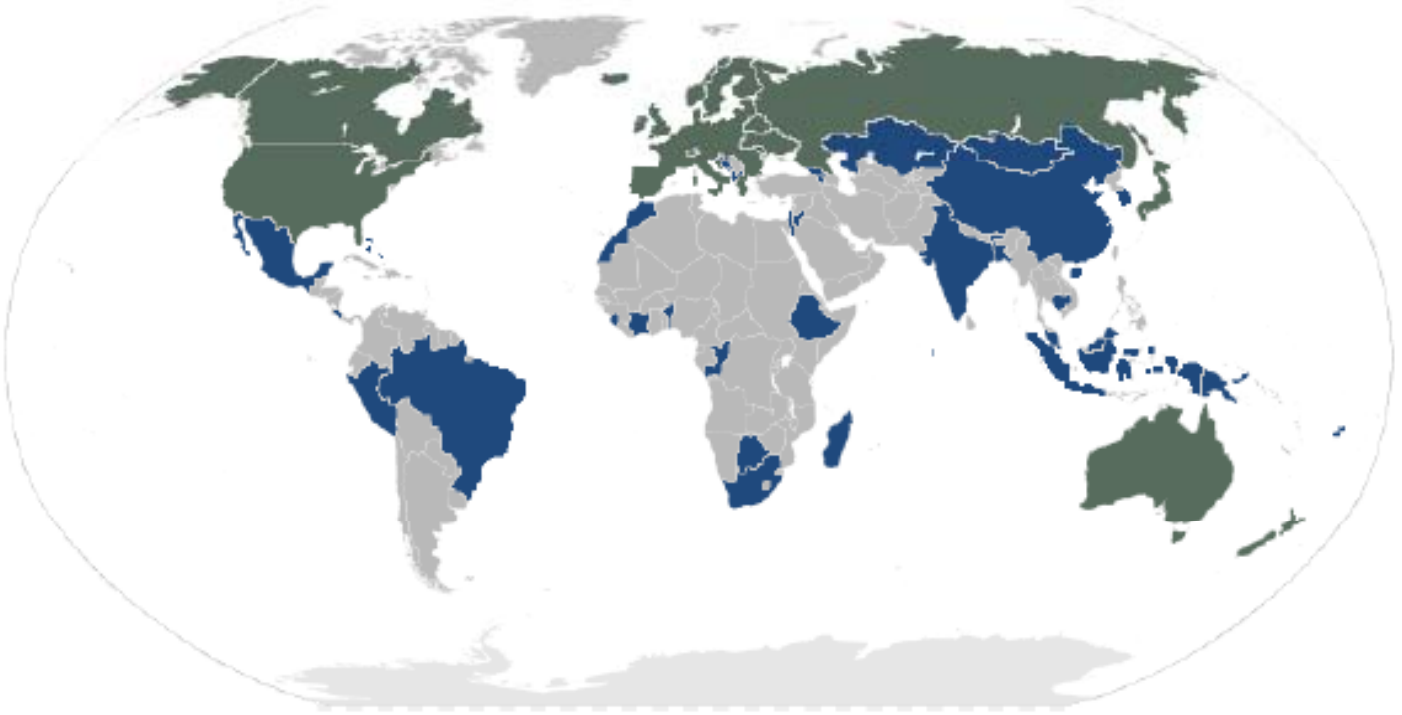
UNEP

Home Annex I Countries Non Annex I Countries Others p Aviation Maritime tline



Welcome to the UNEP Climate Pledges Site

The site presents the current country pledges and the remaining gap for reaching global climate change mitigation goals. The site and graphics will be continuously updated with new pledges, mitigation commitments and information from country parties.



Countries with pledges	Annex I countries	Non Annex I countries
IPCC GHG reduction recommendation	25% - 40 % below 1990 in 2020	15 % - 30 % below 2020 BAU in 2020

Moving from low carbon – only - to a sustainable green energy economy

- There is an urgent need to see climate solutions NOT as reductionist visions BUT as green and attractive societies
- Objective will be to address both climate mitigation and energy security concerns while providing social and economic benefits to the population at large
- Financial crises recovery packages have included strong focus on green energy in many countries
- Need to learn from successful experiences to get it right and avoid expensive mistakes

RE & JOB CREATION

Examining experiences from EU & US

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Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

RENEWABLE ENERGY: EMPLOYMENT EFFECTS

Impact of the Expansion of Renewable Energy on the German Labour Market

Manufacturing of Systems and Components

€ 7.2 billion

72% of which domestic and 28% export

Operation and Maintenance

€ 2.3 billion

100% of which domestic

* additional € 1.3 billion combustibles and fuel

Thereof Domestic Intermediate Inputs

Equipment for generating, distributing, etc. electricity

€ 506 million | € 502 million | € 1 billion

Machines

€ 547 million | € 339 million | € 0.9 billion

Business-related services

€ 667 million | € 49 million | € 0.7 billion

Metal products

€ 547 million | € 339 million | € 0.6 billion

Communications, radios and TVs, electronic components

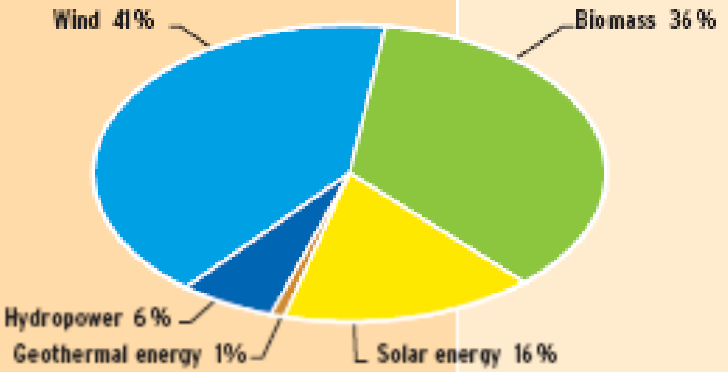
€ 399 million | € 0.4 billion

For information only: imported intermediate inputs € 1.1

Direct employment: 71,500

Indirect employment: 85,500

Total 2004: ca. 157,000 jobs



"The systematic expansion of renewable energy is not only good from the environmental and climate policy point of view, but also for innovation, growth and employment in Germany"
Sigmar Gabriel, the German Minister for Environment

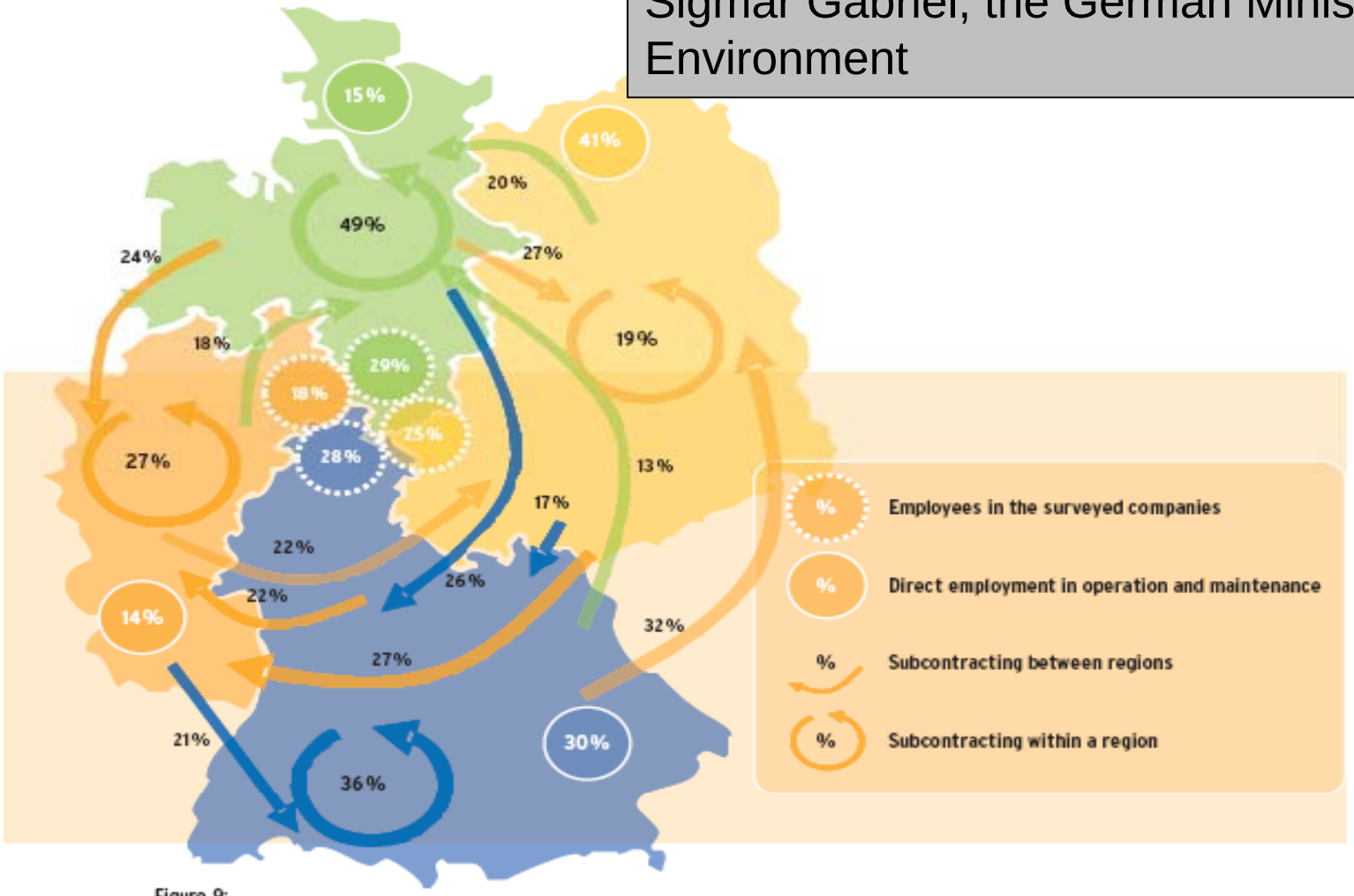


Figure 9:
Employment related to the local operation of systems and to system production.

Already reached 250.000 in 2007 - new projections indicate 400.000 in 2020

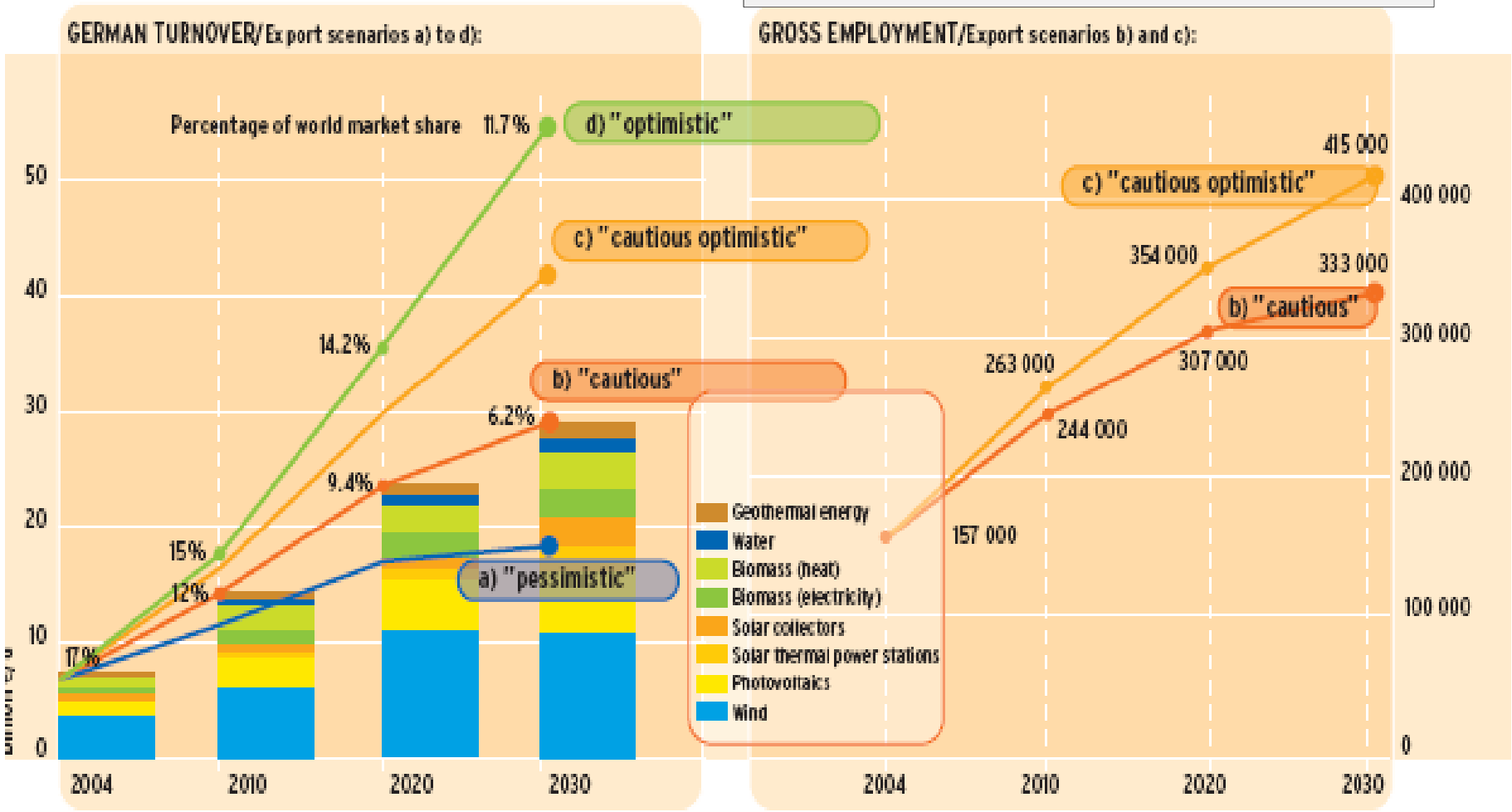


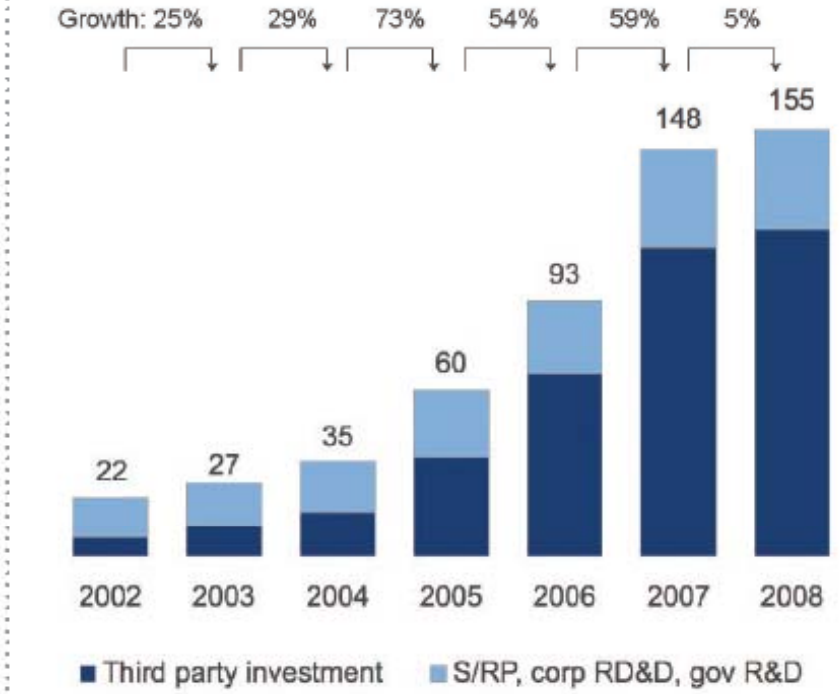
Figure 10:
Turnover of German businesses domestically and abroad, as well as the corresponding gross employment effects until 2030 for various export scenarios (bars represent the investments in export scenario b).

Danish experiences

- Domestic employment in wind energy industry and component delivery – approx. 23.500.
- Export earnings from wind – 6 billion € (2009) equivalent to 8,5 % of total Danish exports
- Total global earnings for Danish wind industry approx. 12 – 14 billion € and expected to grow rapidly
- Danish power supply is based on a mix of sources with more than 20% from wind and with potential to grow towards 50% over next decade.
- Domestic market very important in early stages, but no longer determining

Global power capacity from new renewable energy sources (excluding large hydro) reached 280 Gigawatts (MW) in 2008 adding approx 40 GW in 2009
For comparison 31 GW of coal-fired power-generation capacity is currently under construction in OECD countries

Figure 1: Global new Investment in Sustainable Energy, 2002-2008, $ billions



S/RP = small/residential projects. New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals

Source: New Energy Finance

Figure 3.
Solar PV, Existing World Capacity, 1995–2008

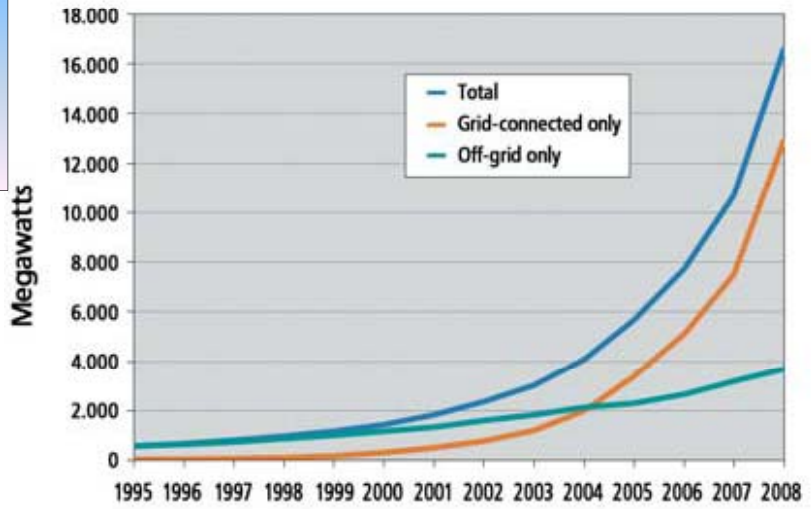
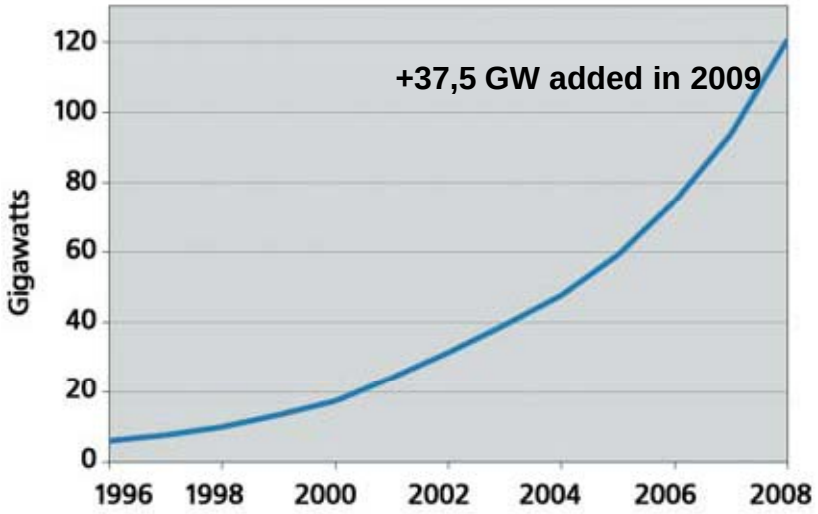


Figure 1.
Wind Power, Existing World Capacity, 1996–2008



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Hard to get comparable numbers but table illustrates scale

Figures from 2006/7 and only for electricity - so current total probably closer to double

table 1.0: **renewable electricity employment – selected countries and world**

ENERGY SOURCE	SELECTED COUNTRIES	
Wind	Germany	84,300[g]
	United States	16,000[a]
	Spain	32,906[b]
	Denmark	21,612[c]
	India	10,000[d]
	World estimate	**300,000[f]**
Solar PV	Germany	50,700[g]
	United States	6,800[a]
	Spain	26,449[b]
	World estimate	**170,000[f]**
Solar Thermal electricity	United States	800[a]
	Spain	968[b]
Biomass power	United States	66,000[a]
	Spain	4,948[b]
Hydropower	Europe	20,000
	United States	8,000[a]
	Spain (small hydro)	6,661[b]
Geothermal	Germany	4,500[g]
	United States	9,000[a]
All sectors	**World estimate**	**1.3[e] - 1.7[f] million**

a 2006 data: Bedzek 2007
b 2007 data: Nieto Sainz J 2007, in UNEP 2008 Table 11.1-4.
c 2006 data: Danish Wind Industry Association
d 2007 data: Suzlon 2007
e 2006 data: REN21 2008 p7
f UNEP 2008 p295; the world total for renewable sector is the UNEP figure minus estimated jobs in solar thermal as these are nearly all in solar water heating.
g BMU 2008, German Minstery for Environment

Many RE Industries have moved from SME to large scale – new SME approach needed

- Wind, solar and biofuels have in most countries started as SME, but with mergers and acquisitions become large scale industries to meet the increasing global demand
- Still large scope for SMEs to become part of the RE industry BUT focus should increasingly be on components, systems and integration
- Differences between countries and technologies, but with this shift the SME opportunities in the RE sector has many similarities with SMEs in Energy Efficiency

Wind Industry opportunities for SME involvement

Non-exhaustive list of examples

- Turbine manufacturers
- Component subcontractors
- Blade manufactures
- Transportation logistics
- Project management
- Finance and legal expertise
- Planning and environmental analysis
- Site Testing
- Tower manufacturers
- Grid Connection hardware/software
- Green Electricity Sales
- Domestic Renewable energy systems

Wind Energy Manufacturing in US

I. Wind turbines contain more than 8,000 components and with limited maintenance opportunities, variable conditions and the increased demand for clean energy, wind energy manufacturers face unique challenges.

II. The wind energy market provides great opportunities to product manufacturers and material suppliers as the fastest-growing sector of the global energy market. In fact, U.S. demand for wind turbine systems and components is expected to increase 6.8 percent per year to $10.1 billion in 2012.

III. SME has manufacturing experts and resources in key technologies like grinding, machining, finishing, gear processing, composites and inspection needed to efficiently produce these high-tech machines.

Opportunities in Energy Efficiency

- EE is characterized by large potential but based on sum of many different sectors and actors.
  - Buildings - one major area of focus – heating and cooling, lighting, windows, insulation, design, etc. Both retrofitting and new constructions.
  - Transport – more efficient combustion engines and car design, electrical vehicles, biofuels, public transport systems and new innovations for mobility
  - Industry – process improvements, motors and drives, heating, cooling and lighting
  - Service – lighting, cooling, heating, process improvements
- Plenty of niche areas where SMEs already are important and could be further engaged

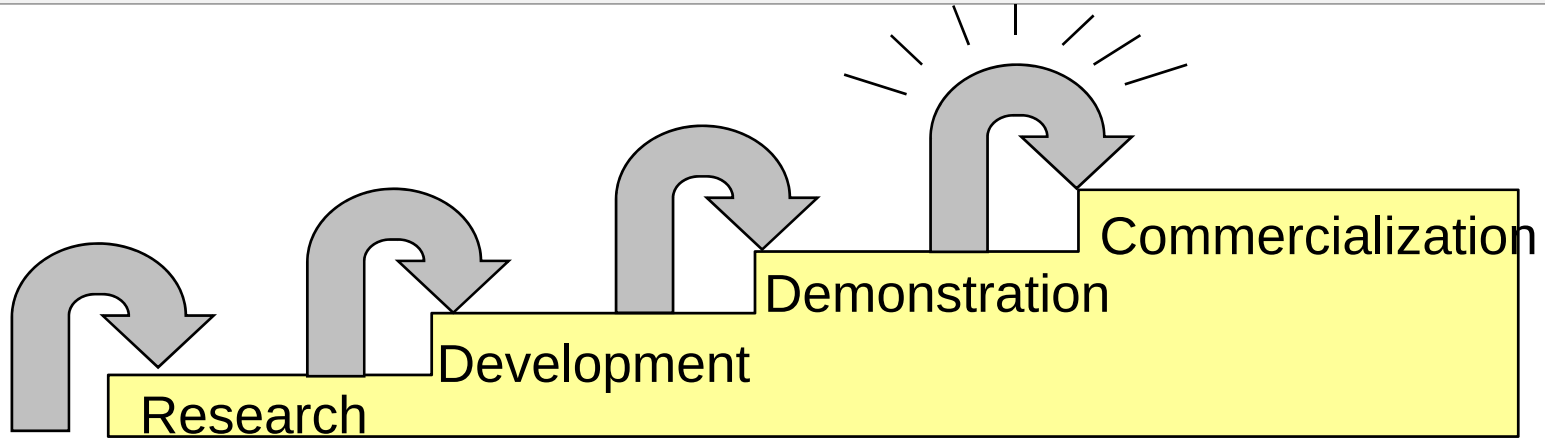
STRONG RATIONALES
PLENTY OF OPPORTUNITIES

So how to make it happen

- General steps in SME support
- Examples of SME development programs
- Stimulating domestic demand

Facilitating SME development

In order to target policy interventions and the necessary finance, the needs at the different stages of business development must be better understood



"Contributing to sustainable energy is not a primary goal for SMEs"

- Making money:
  - **Cutting energy consumption cost**
  - **Selling sustainable energy products and services**
    - **Eco-industrial sector**
- Eco-industry's strategy to make money
  - **Innovate sustainable solutions**
  - **Innovation support services**

European Innovation Platforms

- Based on analytical insights into needs and prospects
- Development and testing of new or better innovation support services
  - partnerships between public and private support providers
  - support policy learning
  - services validated by SMEs
- Oriented towards Europe-wide deployment
  - regional or national actors
    incl. using EU Structural Funds
  - Enterprise Europe Network

- **Focus on three innovation support services:**
  - support to strengthen the business plan for an innovation by means of an innovation voucher scheme
  - improve their access to public and/or private investments
  - design and implement new funding schemes

Conclusion

- **Sophisticated innovation support services needed**
  - EU support: risk sharing in experimenting new solutions
- **PPP deliver them Europe-wide**
  - EU support: deployment promotion
- **Public authorities facilitate the co-ordination of all public services in companies' eco-system (clusters)**
  - EU support: policy learning, Structural Funds
- **Companies can make money from sustainable energy solutions**
  - Incl. satellite-based and renewable energy services

European Commission
Enterprise and Industry

Entrepreneurship and Innovation Programme (EIP)

Support to innovation and SMEs in the EU

•Access to finance for SMEs through "CIP financial instruments" which target SMEs in different phases of their lifecycle and support investments in technological development, innovation and eco-innovation, technology transfer and the cross border expansion of business activities.

•Business services: the "Enterprise Europe Network". Business and innovation service centres all around the EU and beyond provide enterprises with a range of quality and free-of-charge services to help make them more competitive.

•Support for improving innovation policy: Supports transnational networking of different actors in the innovation process and innovative companies, including benchmarking initiatives and the exchange of best practice.

UK Carbon Trust instruments

Research & Development

- Up to £500,000 applied research grants to innovative new low carbon **technologies**

- **Over 1900** Applied Research proposals
- £28m funding offered to 190 projects
- £32m leveraged from private sector
- 65% generate patents, investment or sales

Business Incubation

- Supporting development of low carbon **companies** and helping them attract private investment

- **90** incubator companies
- Over **£85m** of private sector funding raised, leveraged £16 of private funding for every £
- 3 have achieved AIM listings

Technology Acceleration

- Working with industry to accelerate low carbon technology **markets** by addressing major barriers and costs

- **8** demonstrators: biomass heat, Offshore Wind, Marine, CHP, buildings, industrial energy efficiency, Solar PV and Biofuels
- Over £100m committed to date, leveraging £200m of private sector funding

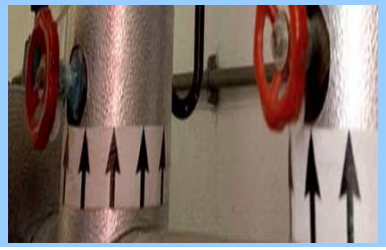
Investments - VC

- Investing in new low carbon businesses and providing access to new opportunities for UK investors.

- £13.5m invested to-date – UK represents over half of all CleanTech deals in Europe
- Over £110m private funding leveraged
- £10m China-UK VC Joint Venture - *CECIC*

Loans

- Deploying proven energy efficient and renewable technology through interest free loans to SME and PS.



- **£250m loan portfolio - over 12,000 technologies qualify through ETL**
- Over 450 suppliers engaged in programme
- Av. £30,000 per loan, payback <4 years

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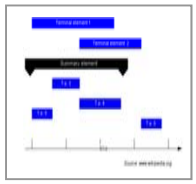
US Energy Innovation Hubs

The US Department of Energy has launched three Energy Innovation Hubs. Modeled in part after the Department's successful Bioenergy Research Centers, the Hubs will help advance highly promising areas of energy science and engineering from the early stage of research to the point where the technology can be handed off to the private sector.

Each Hub will foster unique, cross-disciplinary collaborations by bringing together leading scientists to focus on a high priority technology. The Hubs will tackle three of the most important energy challenges we face:

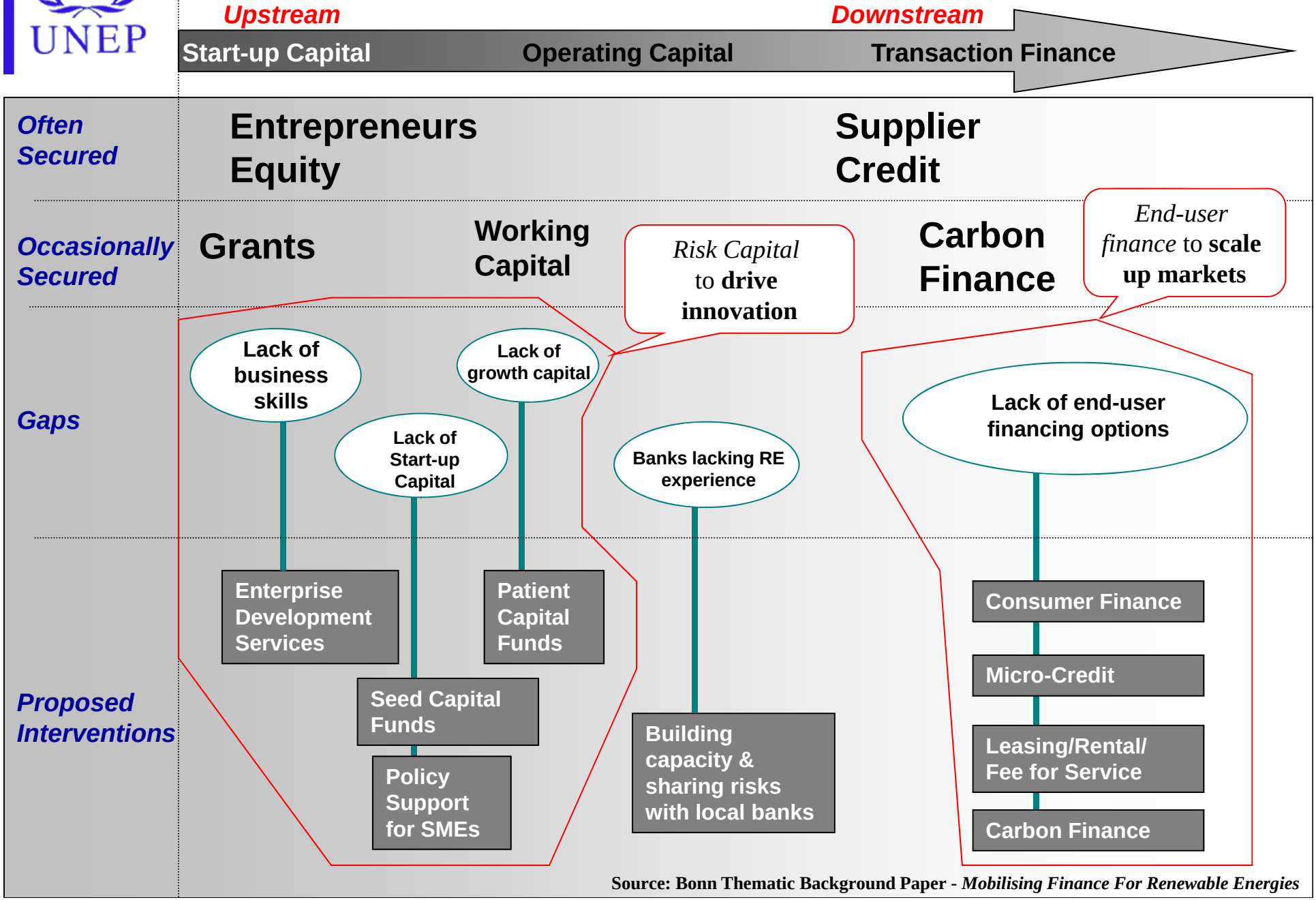
- How can we derive fuels directly from sunlight in an efficient and economical way?
- How can we design, construct and retrofit commercial and residential buildings that are vastly more energy efficient than today's buildings?
- How can we use modeling and simulation technologies to make significant leaps forward in nuclear reactor design and engineering?

Corfo (Chile) Public Finance Support Programmes

Preinvestment	Investment				
					
Pre-Investment Study	**Project launch assistance**	**On-the-job training for Human Resources**	**Equipment & Infrastruture**	**Long term Property leasing**	**Specialized Training & Recruitment**
Up to 60% of the pre-investment study cost. Maximum= **US$30,000**	Up to **US$30,000** for start-up activities	Up to 50% of annual salaries. **Maximum= US$25,000** per employee hired	Up to 40% of investment on equipments and infrastructure. **Maximum=US$ 2.000.000**	Up to 40% of long-term property leasing costs (5years). **Maximum=US$ 500.000**	Up to 50% of the specialized training or recruitment. **Maximum=US$ 100.000**

UNEP In-Country SME Programmes

Analysis Framework: The Finance Continuum for Clean Energy SMEs



Source: Bonn Thematic Background Paper - *Mobilising Finance For Renewable Energies*

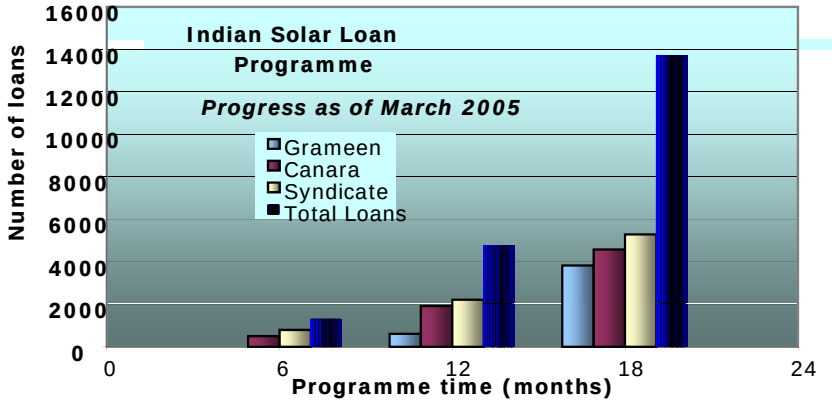
Stimulating demand

- Importance of a domestic market or support for export access
  - Regulatory approaches (preferential treatment or import levies)
  - Subsidies for RE & EE applications
  - Feed-in tariffs
  - Customer finance options e.g. engaging commercial banks and other finance institutions

Financing the Customers of SMEs

In markets where small scale clean energy is economically viable, ...why aren't banks lending ?
…. and, what can be done about it ?

- Example – Indian Solar Loan Programme
  - State of Karnataka, Solar Home Systems, 2003 - 2006
- Before: many SHS vendors, small total sales, little credit
- During: consumer finance programme offered through Canara bank and Syndicate bank, interest rate subsidy, 16,000+ systems financed, other banks starting to lend
- After: subsidy phased out, banks continuing to lend, although lose market share in an increasingly competitive credit market
- Real Driver -> access to financing provided through 2076 bank branches



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